

Neutrons Canada Prospectus



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1 Executive Summary

Research institutions across Canada are invited to become founding Members of a new organization, “Neutrons Canada,” which will govern, manage, and represent Canada’s infrastructure program for research and development with neutron beams.

This prospectus provides potential founding Members with (1) the context for the founding of Neutrons Canada, and (2) recommendations for the purpose, roles, potential scale and scope, and governance structure of the prospective organization. The recommendations arise from the consultative processes of the Canadian Neutron Initiative (CNI) working group over the past few years, including the January 2020 Roundtable on Neutrons Canada attended by university Vice-Presidents of Research, at which the CNI working group was appointed as the steering committee for the establishment of Neutrons Canada.

Innovation in materials underpins many technology advances for national priorities, such as a clean environment, a clean growth economy, safety and security, and health. Neutron beams are irreplaceable tools for such application-driven research as well as for fundamental research.

Creation of Neutrons Canada is part of a cohesive, multidisciplinary, national strategy to rebuild Canada’s capabilities for research using neutron beams following the closure of Canada’s primary neutron source, the NRU Reactor in Chalk River, in 2018. At the scale required to meet the Canadian demand for neutron beams, an infrastructure program is now estimated to cost \$20M per year. The rebuilding of Canada’s neutron infrastructure is already underway with the McMaster-led national CFI 2020 Innovation Fund (IF) award, “Building a Future for Canadian Neutron Scattering” (Phase 1), which is providing \$36M toward the neutron beam laboratory at the McMaster Nuclear Reactor (MNR) and six-year partnerships with two US neutron facilities. The proposal for this award envisioned the creation of Neutrons Canada as the organization that would not only operate the neutron beam laboratory at McMaster, but also coordinate access to the requested infrastructure at foreign partner facilities along with other infrastructure to be proposed in coming years (the University of Windsor is currently leading a “Phase 2” proposal). If the awarded and proposed projects are successful, then Neutrons Canada will manage or oversee at least \$70M in infrastructure distributed at 3 to 5 locations, domestic and foreign, by the end of 2030.

On behalf of its Member institutions, Neutrons Canada will play an essential role in facilitating community activities to secure capital and operating funds for the infrastructure program. It will deliver or support major neutron projects and related initiatives as appropriate. Neutrons Canada will represent the program as a credible institutional voice to government, as Canada’s agent for contracts with foreign neutron sources, and as a consensus builder among the communities that rely on neutron beams. Coordinating such efforts nationally will be the most effective means to deliver a truly pan-Canadian program that enables the community to speak with one voice.

Applying best practices for the governance and management of Major Research Facilities (MRFs) in Canada, it is recommended that Neutrons Canada be created over the next year as a not-for-profit corporation with an independent Board of Directors elected by Member institutions that conduct research with neutron beams. In doing so, Neutrons Canada can begin building expertise to assist with the major projects and neutron-beam user operations at distributed neutron sources, and also begin to undertake activities to secure funding (for example, long-range planning, government relations, future CFI proposals, project and program support and management, etc.).

